

# Extent of Home Care in a Small Community

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**E**XPANSION of home care programs has been relatively slow, despite the growing list of publications, including popular national magazines (1), which document their success. Preliminary estimates of a Public Health Service survey show only 46 coordinated home care programs in the United States (2). Although the 1960 questionnaire of the American Hospital Association revealed 166 programs in general hospitals, those reported tend to be in large hospitals and metropolitan areas (3). The individual home care programs listed or reported in the most comprehensive publications (4-6a) are in metropolitan locations, with very few exceptions (6b).

Actually, development of satisfactory programs in small cities and rural areas may be hampered by high costs of organizational needs, while current usage patterns indicate average census rates are only 11 home care patients per 100,000 population (2a). Only in the New York municipal programs is the rate more than 20 patients per 100,000. At 11 patients per 100,000 a city of 10,000 would have an average of 1 home care patient; a county of 20,000, populous for many U.S. counties, would have 2.

The Sheldon Memorial Hospital in Albion, Mich., and the Calhoun County Health Department, assisted by the W. K. Kellogg Foundation and the Michigan Department of Health, established a home care program in 1960. They attempted to reduce costs by integrating services to patients with existing public health nursing programs and by encouraging the broadest

possible use of home care. In its first year, the program served an unusually high number of patients, relative to the population served. The average daily census of 16 patients (table 1) indicates a ratio of 70 per 100,000 population.

The expenditures for the first year of the program were \$27,316. Salaries of the visiting nurses and their supervisor accounted for \$12,500. The salaries were the largest single item, and were purchased on a flat-rate basis from the Calhoun County Health Department (7).

The arrangement with the health department was an important part of reducing the cost of service. Some savings in the total may be possible with more experience. For example, the cost per patient-day of home care was \$4.80, and it might have been reduced to \$4.00. Costs of physicians' services and some drugs are excluded. Either figure compares favorably with nursing home care in the area, which often costs \$10 per day, excluding physicians' services and drugs.

Because of the hospital's low fees, lack of support for welfare patients, and lack of coverage from two of three large insurance or prepayment groups, recovery of costs by the hospital was poor. Of the total cost, only one-third was billed to patients or third parties. Of the third billed, only half was collected (7). Further experience will be necessary before definite conclusions can be drawn.

This paper describes briefly factors in the environment which may have stimulated the unusual use of the program, and describes the patients who received home care in its first year. The available measures of the patient population are compared with similar informa-

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tion reported about other programs in an effort to isolate unusual factors in the utilization.

## Environment and Policies

Albion is a relatively highly industrialized city of 13,000, located midway between Jackson and Battle Creek, Mich. Sheldon Memorial Hospital, with 75 beds for acute care, is the only hospital in Albion, and it also serves an additional 10,000 persons within an 8-mile radius (8). (The population of the service areas was obtained by study of discharges from Sheldon and all surrounding hospitals in 1959, and it is corrected for the fraction of population, from fringe areas, which seeks hospital care elsewhere. The geographic area served corresponds closely with the trading area.) The hospital utilization rate is high (1,120 patient-days per 1,000 population), and the hospital is often crowded. There is a shortage of facilities for care of the chronically ill in the county and in the service area. All of these factors may have increased the use of home care.

The Calhoun County Health Department had an established program of public health nursing before the home care service was added. The nursing program included home visits for communicable disease control, including tuberculosis and venereal disease, for maternal and child health, for patients disabled with orthopedic and related problems, and for patients

with cancer. The health department also assisted the State mental hospitals by providing followup home visits to discharged patients. The public health nurses participated in diagnostic surveys for hearing and tuberculosis and assisted in the school health program. Nurses, however, did not give extensive care. Most visits were for instructional purposes, and continuing nursing care in the home was nearly impossible because of other demands on the nurses' time. The extensive public health nurse activities possibly encouraged the development of home care.

The home care program was established in late September 1960 under the hospital's board of trustees. Policymaking was shared, however, with a medical staff committee which included the director of the Calhoun County Health Department. Among the policies intended to encourage maximum use of the program were:

1. No social or financial restriction was placed on acceptance of patients other than they have a satisfactory home. Patients could be accepted from Sheldon or any other hospital, or could be accepted without hospitalization. Patients could come from or be in nursing homes. They could have homes in the city, county, or nearby parts of surrounding counties. During the experimental years they could be indigent, aided by any third party, or self-financed.

2. No medical restrictions were placed on the program, except those designed to avoid direct conflict with public health nursing. Mental illness, tuberculosis, and postnatal care were excluded for this reason. Treatment of malignancy was largely transferred to home care.

3. Considerable attention was given to the possibility of short-term home care for patients likely to recover completely within a short period. A special category of "active" service was established, for which referral of patients recuperating from cholecystitis, appendicitis, resolving pneumonias, and similar diseases was encouraged.

4. An informal committee composed of the home care medical director, who was an active member of the hospital staff, the supervisor of the home care nurses, and the director of nurses of Sheldon Memorial Hospital made daily rounds of the hospital, searching for likely can-

**Table 1. Average census, admissions, and discharges, October 1, 1960, to September 30, 1961, Sheldon Memorial Hospital home care program**

Month	Average census	Number admissions	Number discharges
October-December, inclusive.....	15	32	18
January.....	15	8	9
February.....	15	8	7
March.....	18	11	4
April.....	24	5	7
May.....	24	16	9
June.....	30	15	15
July.....	22	6	12
August.....	22	7	10
September.....	17	6	6
Year.....	16	114	97

**Table 2. Number of patients discharged from home care, by location at application and age group**

Patient's location at application to home care	Age group (years)		
	0-64	65 and over	All patients
Sheldon Memorial Hospital..	29	26	55
Home.....	14	17	31
Other.....	2	5	7
Total.....	45	48	93

didates. Attending physicians were then asked if the patient might be considered for home care at the time or in the future.

#### Patient Load

Detailed records of nursing and other care were kept on first-year patients. Of the 97 first-year discharged patients information for 93 was summarized on a 56-item questionnaire, by the program staff, for analysis by the University of Michigan Bureau of Hospital Administration. The characteristics of these 93 discharged patients are summarized in tables 2-4. The services they received and their length of stay with the program, relative to certain major characteristics, are shown in tables 5-7. Diagnostic information is shown in tables 8-10.

*Age.* Table 2 shows the age groups of the 93 patients studied according to their location at the time of admission to the program. More than half the patients were 65 years or older. More than two-thirds of the patients were 45 years or older (table 5). These findings are somewhat striking in view of the survey by Littauer, Flance, and Wessen, which indicated that four programs using the 65-and-over age category had an average of only 39 percent of patients in this category. Another five programs, showing age data for patients 70 years and over, indicated 40 percent in the category. This finding led Littauer to the conclusion that "A minority of the patients were in the geriatric (age 65 and older) category. In fact, in only two programs reporting age data . . . were more than half the patients in the geriatric group" (6c). The Sheldon Memorial Hospital pro-

gram received at least its expected share of aged patients and possibly drew more heavily from this group.

Earlier reports from programs surveyed by the Public Health Service indicate a range from 15 to 66 percent of patients over 65 years of age. In 1952, the program in Queens County, N.Y., reported 49 percent aged 65 and over and 85 percent aged 45 and over (4a). The program in King County, Wash., reported 65 percent of the patients over 65 years and 83 percent over 45 years (4b). On the other hand, one program, Richmond, Va., reported 52 percent of its patients under 15 years of age and only 15 percent over 65 years (4c).

No reasonable conclusion appears regarding the age distribution of home care patients in the various programs, unless it is that reported programs have been arbitrarily limiting their age selection. For example, Richmond in maintaining its high pediatric load must have excluded possibilities for geriatric care. The reverse might be said of the Queens and King Counties programs. Thus, in any of these programs, there appears to have been room for expansion to age groups not served as comprehensively as possible.

*Source of patients.* The division between patients admitted from the hospital and from the home does not bear intensive examination at this time. Many of the patients who were at home when they applied for home care had been or were to be in the hospital for treatment of the disease or diseases that led them to home care. The three other programs reporting comparable data range from 2 percent hospital dis-

**Table 3. Places of residence of home care patients, by location at application**

Location at application	Residence		Total
	Urban Albion <sup>1</sup>	Rural area	
Sheldon Memorial Hospital...	46	9	55
Home.....	22	8	30
Other.....	7	0	7
Total.....	75	17	92

<sup>1</sup> Includes unincorporated tracts in adjacent townships.

<sup>2</sup> Information for one patient not available.

charges (Richmond) to 84 percent hospital discharges (Montefiore, N.Y.).

The patients tended to live near or in the city (table 3). The population of the city or town area, as opposed to the incorporated city limits, is not known. However, the population of Albion and two adjacent townships is more than 15,000. On this basis, the number of patients per thousand population is greater for the urban area than the rural area. This may result from a number of factors, including location of aged and chronically ill and arbitrary selection processes. The Albion area residents provide only 67 percent of hospital admissions, as opposed to 80 percent of home care admissions. At this point in the program's history, the cause is unknown.

### Discharge of Patients

A markedly lower rate of discharge to the hospital occurred than in previously reported programs (table 4). Only 23 percent of patients were discharged from home care to Sheldon Memorial Hospital. Seven percent died. Littauer, Flance, and Wessen reported 35 percent discharged to hospitals and 17 percent deceased in eight programs (6d). In 1952, Montefiore, Queens County, and King County discharged a majority of patients from home care to the hospital, although the death rate was 7 percent or less (4d). Apparently

**Table 4. Distribution of patients discharged from home care, by age groups**

Discharged to—	Age group (years)				All patients	
	0-64		65 and over			
	Number	Per- cent	Num- ber <sup>1</sup>	Per- cent	Num- ber	Per- cent
Physician only-----	38	84	21	45	59	64
Sheldon Memorial Hospital----	7	16	14	30	21	23
Other-----	0	-----	6	13	6	7
Deceased-----	0	-----	6	13	6	7
Total--	45	100	47	100	92	100

<sup>1</sup> Information for one patient not available.

**Table 5. Average number of days on home care per discharged patient, by age group**

Age group (years)	Number of patients discharged	Total number days	Average number days per patient
0-14-----	9	243	27
15-44-----	16	464	29
45-64-----	20	1,457	73
65 and over-----	48	2,345	49
Total-----	93	4,509	48.5

**Table 6. Average number of days on home care per discharged patient, by location at application and age group**

Location at application	Age group (years)		All patients
	0-64	65 and over	
Sheldon Memorial Hospital-----	46	46	46
Home-----	55	44	49
Other-----	32	77	64
Total-----	48	49	48.5

the Sheldon Memorial Hospital program, in its initial year of operation, was caring for a larger fraction of patients who recovered during their home care.

### Services Used

Information on the amount of services and the services provided per unit of time on home care is not extensively reported. Table 5 shows the length of time with the Sheldon program for four age groups, and table 6 for two age groups and the location of patients at the time of application. The two older age groups tended to stay longer with the program regardless of location of the patient. The remarkably long stay of middle-aged patients reflects a number of patients who were with the program 4, 5, or 6 months before discharge. It is interesting that comparison with the services given by age (table 7) indicates that these patients received only slightly more service than older patients, although they were with the program longer.

Table 7 shows the frequency of services given per discharged patient. Nursing visits are by far the most frequent. The frequency of these is comparable with the 1952 frequencies of Montefiore and King County, but markedly less than Queens County or Philadelphia programs. The Montefiore records indicate that therapist activities and laboratory services were considerably more frequent than for Sheldon participants (4e). Physician visits, an integral part of the programs serving indigents, were arranged by the physician and the patient in all cases in Albion, and they were not recorded during the first year of operation at Sheldon Memorial Hospital.

Littauer, Flance, and Wessen, summarizing from five to nine programs, depending on data available, chose a different measure of the service, the number of days per visit. This unit can be obtained from tables 5, 6, and 7 by dividing the number of instances of service per discharged patient into the number of days' stay for the appropriate group of patients. Thus, nursing visits in Albion occurred once every 4 days compared with once every 5.5 days reported by Littauer, Flance, and Wessen for nine programs. Physical therapy visits occurred every 160 days in Albion versus every 29 days in eight programs. Occupational therapy visits occurred every 37 days in Albion versus every 42 days in eight programs. Housekeeping services were provided by Sheldon Memorial Hospital once every 80 days as opposed to once

every 15 days by six other programs. The sum of Sheldon services appears to have been slightly, but not greatly, less than those given by the programs studied by Littauer, Flance, and Wessen (6e).

Only meager conclusions can be drawn from these comparisons. The wide variation between existing programs, the differences introduced by various reporting schemes, and the absence of much key information are such that the Sheldon Memorial Hospital program appears to resemble a few of the programs in each respect, and does not stand out as importantly different from any. It does not appear possible to draw conclusions about the impact of the Sheldon policies aimed at increasing the volume of service, except that: (a) the total volume of service relative to the population is higher than other programs, and (b) this has occurred without radical departure from previous experience in age composition, location, death rate, or frequency of service per patient. In only one measure, discharges from the program for episodes of illness requiring hospitalization, does the Sheldon program appear at the end of the range of reported experience. In this case it is the low end.

#### Diseases

In these comparisons, an important measure has been deliberately left until last. The disease classification of patients, for which considerable information exists, has not been discussed. This

**Table 7. Frequency of visits and services per discharged patient, by location at application and age group**

Service	Location at application			Age group (years)			All patients
	Home	Sheldon Memorial Hospital	Other	0-44	45-64	65 and over	
Visits.....	18.0	13.2	9.0	9.9	15.7	15.8	14.1
Nurse.....	15.4	11.5	2.8	8.2	11.8	14.0	11.9
Physical therapy.....	.6	-----	1.0	-----	.3	.4	.3
Occupational therapy.....	.5	1.4	4.6	.3	3.6	1.0	1.3
Housekeeping.....	1.2	.3	.6	1.4	-----	.4	.6
Dietetic.....	.3	-----	-----	-----	-----	-----	-----
Laboratory, X-ray, etc.....	.3	.3	.1	.2	.3	.3	.3
Transportation (trips).....	.1	.1	-----	.1	.2	.1	.1
Sterile dressings.....	.3	.1	-----	-----	.6	-----	.2
Equipment.....	.4	.5	.4	.5	.5	.4	.5
Total services per patient.....	19.1	14.2	9.5	10.7	17.3	16.6	15.2

reflects not only the fact that such information is best understood within the framework of other descriptive indices but also my conviction that considerable improvement must be made in the reporting of this information. Table 8 shows the proportions of primary diagnoses of certain common groups of illnesses reported by eight programs summarized by Littauer, Flance, and Wessen, five programs reporting to the Public Health Service, and Sheldon Memorial Hospital. The range of experience defies interpretation. The Albion program again appears markedly different in only two categories, one of which is fractures and other orthopedic problems, where no information is available for any of the programs reported by the Public Health Service. Sheldon Memorial Hospital treated a noticeably greater percentage of patients in this category than Littauer's eight programs. The other area, "postoperative care," has also been reported only in the

Littauer study, but the Albion percentage was nearly 10 times the rate cited. The authors commented that "even postoperative care has been given experimentally" (6f). The Albion experience was apparently no more experimental than any other treatment given.

In the eight programs reported by Littauer, Flance, and Wessen, four disease categories included two-thirds of the diagnoses. These are cerebrovascular accidents and other conditions affecting the brain, cardiac conditions, malignancies, and neurological conditions other than those affecting the brain (6f). Aside from the unusual Richmond experience, which appears to have been concentrated in pediatric and communicable diseases, the reported programs showed heavy concentration in these areas. As shown in table 8, 66 percent of Montefiore patients, 49 percent of Queens County patients, 57 percent of the Philadelphia patients, and 47 percent of the King County patients had these

**Table 8. Percentage of patients with primary diagnoses in selected disease groups**

Disease group	Littauer <sup>1</sup> (N=1,434)	Richmond, Va. (N=2,910)	Montefiore, N.Y. (N=83)	Queens County, N.Y. (N=504)	Philadel- phia (N=86)	King County, Wash. (N=101)	Sheldon Memorial Hospital (N=93)
Cardiac conditions (in- cluding arteriosclerotic heart disease)-----	18.5	5	32	24	2	21	12
Cerebrovascular acci- dents and other condi- tions affecting brain (except psychoses)-----	22.2	3	1	7	37	11	9
Diabetes and other metabolic disturbances--	5.6	1	6	9	5	10	9
Fractures and other orthopedic problems (except arthritis)-----	6.3	( <sup>2</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	20
Arthritis-----	5.4	1	4	3	16	7	7
Neurological disease (other than brain)-----	12.9	1	2	2	11	1	3
Malignancies-----	14.1	2	31	16	7	14	8
Diseases of lower respi- ratory tract-----	4.0	8	4	2	( <sup>3</sup> )	3	7
Circulatory disorders (except cardiac)-----	1.7	3	6	9	2	7	2
Postoperative care-----	1.5	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	11
Other conditions <sup>4</sup> -----	7.9	76	14	28	20	26	12
Total-----	100.0	100	100	100	100	100	100

<sup>1</sup> Eight programs: Delaware Hospital; Visiting Nurse Association, Detroit; Greenwich Hospital, Connecticut; Port Chester, N.Y.; Jewish Hospital, St. Louis; Visiting Nurse Association, Philadelphia; San Francisco; and Toronto.

<sup>2</sup> Less than 0.5 percent.

<sup>3</sup> Information not available.

<sup>4</sup> Includes some conditions for which information was not available.

SOURCES: References 6f and 4, pp. 24, 40, 52, 91, and records of the Sheldon Memorial Hospital home care program.

NOTE: Numbers in parentheses are the number of patients.

diseases. In Albion's first-year experience, only 32 percent of the patients had a primary diagnosis coinciding with one of these categories. The relative importance of other diseases appears to have been greater in Albion.

One serious difficulty with these measures of diagnosis is particularly striking in the term "postoperative care." This term is not explained by Littauer, Flance, and Wessen. Obviously it means care after surgery, but it must imply certain limitations. (More than one-fourth of the Albion patients had surgery.) In table 8 the term indicates "patients receiving home care for conditions which were primarily treated by surgery, except insofar as the surgery was for one of the specific disease categories listed above." For example, a patient who had had surgery for malignancy was included as a malignancy patient, not as a postoperative care patient.

By extension, this problem leads to some weaknesses of the entire system of categorizing primary diagnosis in home care. Although it may be rational to expect to be able to isolate a primary reason for hospitalization, to do this for home care is more difficult. Where many of the patients are elderly, where multiple diagnoses of chronic disease are common, and where treatment extends over several months, the difficulties for practicing physician or researcher of isolating one realistic primary diagnosis may be insurmountable. For example, a 69-year-old Albion man was admitted with compression fractures of 5th lumbar and 11th thoracic vertebrae, diabetes mellitus, a stasis ulcer of the left leg, and arteriosclerotic cardiovascular disease. The isolation of a primary diagnosis, in the sense of one most important to management of treatment, has meaning only when such problems are infrequent. In home care they are not.

To overcome these difficulties, two other attempts at disease grouping were made. Table 9 shows the first of these, delineating the patients who were placed on home care for the treatment of the diseases listed. The records kept by the nurses were used as a basis for determining whether or not the patient received important treatment for the listed problems while on home care. Not all diseases can be identified by a specific treatment regimen, however. This fact limits the application of the system.

Forty of the 93 patients studied had important treatment in one or more of the eight areas selected. The overall ratio was 43 percent, but 51 percent of those patients over 64 years old were treated for one of these diseases. More patients were treated for diabetes than had diabetes or its complications listed as a primary diagnosis, and the same was true of cerebrovascular accidents. Despite the difficulties introduced by separating rheumatic fever from other cardiac problems, apparently some patients with a primary diagnosis of cardiac disease received home care primarily for something else. Thirty of the 93 patients received care for one or more of these three disease categories.

A second analysis was attempted to overcome the difficulties introduced by discussion of primary diagnosis alone. It is apparent from the literature that a large proportion of the home care patients have diseases which require long-term attention. Even cursory review of the patients in the Albion program indicates that many of them have more than one diagnosis, and that often they have more than one "chronic" diagnosis. To provide further information on this question, patients were grouped according to the existence of any diagnosis of one of the diseases known to be numerically impor-

**Table 9. Number of discharged patients who received home care treatment for selected diseases, by disease and age group**

Disease	Age group (years)		Total
	0-64	65 and over	
Diabetes .....	4	9	13
Cerebrovascular accident.....	3	6	9
Any cardiac condition except rheumatic fever .....	3	5	8
Arthritis .....	1	5	6
Rheumatic fever prophylaxis .....	4	0	4
Chronic convulsive disorder .....	2	0	2
Chronic liver disease .....	0	1	1
Ulcer .....	1	0	1
Total .....	18	26	44
Number patients with more than one of the above .....	2	2	4

NOTE: Postpartum and chronic uremia conditions were listed in the patient summary, but none of the discharged patients had these conditions.

tant among patients having more than 30 days' stay in hospitals because of acute illness. The list of diagnoses was taken from a study of long-term patients hospitalized for acute care, reported by the Commission on Chronic Illness. Relatively specific diagnoses were used, and the related International Disease Index numbers are given in table 10. The table shows that 56 of 93 patients had one or more of the listed diseases; 21 had more than one. The presence of these diseases and the incidences of more than one increase strikingly with age. Only 19 of the 68 patients aged 45 and older had none of the listed diseases. Diabetes, cerebrovascular accident, and coronary artery disease continue to be outstanding problems. In addition, fractures of the lower extremities occurred frequently. These four conditions accounted for 54 of 83 occurrences. In the age group 45 to 64 years, they accounted for 14 of 17 occurrences, a slightly higher percentage.

### Conclusions

A comparison of the first year's experience of the Sheldon Memorial Hospital home care program, Albion, Mich., with previously reported programs revealed greater use of the Sheldon program per 100,000 population. Variations among other programs are such that the Sheldon Memorial Hospital program appears within the range of previous experience in almost any dimension. A lower than normal rate of discharge to the hospital for acute illness occurred, and relatively fewer patients had primary diagnoses of cardiac, neurological, and malignant conditions than in most other programs. Whether these tendencies will continue remains to be seen. It is still entirely possible that the findings represent only early experimentation with the possibilities of the program, and that future years will show quite a different use.

I strongly urge consideration of revised methods of classifying patients by disease. Although the list shown in table 10 has obvious drawbacks (the omission of arthritis is striking), a process of multiple listing of all clinically important disease appears to reflect the home care patient load more accurately than simple reporting of primary diagnosis.

**Table 10. Frequency of occurrence of selected diagnoses which required long-term home care, by age groups of patients**

Diagnosis <sup>1</sup>	Age group (years)			All patients
	0-44	45-64	65 and over	
Tuberculosis (002)-----	-----	-----	-----	-----
Neoplasms: malignant, lymphatic, and hematopoietic tissues (140-205)-----	-----	-----	7	7
Diabetes mellitus (260)-----	-----	4	11	15
Diseases of blood and blood-forming organs (290-299)-----	-----	-----	3	3
Mental, psychoneurotic, and personality disorders (318-322)-----	-----	-----	-----	-----
Cerebral hemorrhage, embolism, and thrombosis (331-332)-----	-----	3	9	12
Acute rheumatic fever and acute rheumatic heart disease (400-401)-----	3	-----	-----	3
Coronary artery disease (420)-----	-----	4	9	13
Hypertensive disease (442-447)-----	-----	1	2	3
General arteriosclerosis (450)-----	-----	-----	2	2
Varicose veins of lower extremities (460)-----	1	-----	1	2
Bronchopneumonia (491)-----	-----	-----	-----	-----
Ulcer of duodenum, gastrojejunal ulcer (540-542)-----	-----	2	2	4
Hernia without obstruction (560)-----	-----	-----	2	2
Cirrhosis of liver (581)-----	-----	-----	-----	-----
Hyperplasia of prostate (610)-----	-----	-----	1	1
Fracture, upper extremity (811-817)-----	1	-----	1	2
Fracture, lower extremity (820-826)-----	3	3	8	14
Burns (940-949)-----	-----	-----	-----	-----
Total-----	8	17	58	83
<i>Frequency of diagnoses</i>				
None-----	18	7	12	37
1-----	6	9	20	35
2-----	1	4	10	15
More than 2-----	-----	-----	6	6
Total-----	25	20	48	93

<sup>1</sup> Diagnosis list from Commission on Chronic Illness: Care of the long-term patient, Commonwealth Fund, Cambridge, Mass., vol. II, 1956, p. 529. The diseases are those most commonly found in patients staying in general hospitals more than 30 days. International Disease Index numbers appear in parentheses.

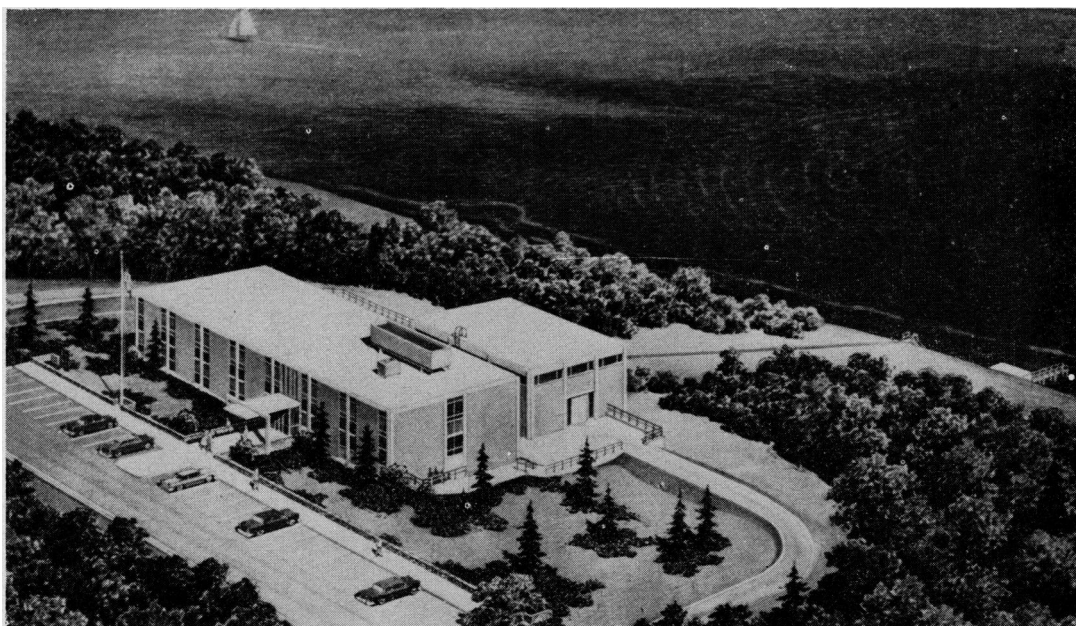
NOTE: (a) Two diagnoses within one category for the same patient, for example, carcinoma of liver and pancreas, were counted as one occurrence; (b) arthritis and/or rheumatism, which were diagnosed in 11 of the home care patients, do not appear on the list.



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## Two New Shellfish Sanitation Research Centers



Architect's drawing of Northeast Shellfish Sanitation Research Center

The Public Health Service is building two shellfish sanitation research centers, one at Narragansett Bay, R.I., and the other at Mobile Bay, Ala. Both are expected to be in operation by the summer of 1963. The Rhode Island center, located at Kingston, will pro-

vide northeastern States with technical assistance, specialized training, and research in shellfish sanitation. The Alabama center will be at Dauphine Island, near Mobile, and will provide research and technical assistance to the Gulf Coast States.